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OF

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AND

JOURNAL FOR RECORDING FACTS AND ANECDOTES

RELATING TO

QUADRUPEDS, BIRDS, REPTILES, FISHES, ANNELIDES,
INSECTS, WORMS, ZOOPHYTES, &c.

THEIR HABITS, FOOD, RETREATS, OCCASIONAL APPEARANCE,
MIGRATIONS, NESTS AND YOUNG.

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THE NATURAL HISTORY OF THE EUROPEAN SEAS. By the late Professor EDWARD FORBES, F.R.S., &c. Edited and continued by ROBERT GODWIN-AUSTEN, F.R.S.

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Capture of Emus hirtus in the Isle of Sheppey.—Accompanied by Mr. Lewis, one well initiated in the mysteries of insect haunts, I started yesterday morning on an excursion through the Isle of Sheppey, designing to hunt up certain interesting species of Coleoptera, which that fertile locality is known to present. After much futile labour for a well-known rarity, the main incentive of our visit, I happened by a fortunate chance to cast my eye on a bank sloping to the sun. There, wriggling in a mass of dried cow-dung, I caught a hasty glance of a creature clothed in long golden hair, and having the appearance of a large Bombus. It immediately occurred to me that a bee wallowing in dung was somewhat incongruous, and at the same moment I arrived at the conclusion that it could be no other than Emus hirtus. My companion was sceptical, which did not surprise me, and after assisting in the hunt left me. In faith of the correctness of my conviction, I continued digging for about ten minutes, and, at a depth of about 8 inches, succeeded in turning out a beautiful and perfect specimen of this rare and conspicuous insect. Having preserved my specimen alive for observation, I would first remark the rapacious manner in which its powerful mandibles are brought into play to destroy whatever opposes it. The cork of the bottle in which it was stored was so excavated that, if undisturbed, it would doubtless have effected its escape. Being enveloped in the *débris*, I was next interested in observing how effectually every particle was removed, by elevating the hind legs and passing them by a comb-like process over the upper surface of the body. The insect being in the constant habit of unfurling its wings, I observe that they are strongly nerved and so long as completely to cover the abdomen. This seems to indicate that, like certain of its allies in this group, its habit is to fly in the sunshine, from one patch of dung to another, in search of its prey.—*Alfred Haward ; Gloucester Road, Croydon, September* 23, 1859.

Larva of a Carab.—Extract from a letter of the late Col. Tylden, R.E., dated "Gaika's Kop, Amatola Range, South Africa, Oct. 9, 1850:"—"I have observed the ground perforated with small round holes, the entrances to which appeared to be very elaborately and neatly finished with mud, bits of grass, &c. For some time I thought them the habitation of the Tarantula, but as they appeared unusually large for that gentleman's location, I one morning proceeded to a nearer inspection. Having picked out one of the smartest and most compact holes I could find, I lodged a charge of powder therein, in engineer-like style. The mine was completely successful, demolishing the edifice with a suitable 'crater' of about eight inches, and ejecting the occupant, which proved to be an animal closely resembling a large flea in form and colour, about 2¼ inches long, with a flat head like a locust, to which were attached two most formidable nippers or jaws. He was rather a vicious-looking fellow altogether. I wished to preserve one, but, as the body is soft like that of the scorpion, it is difficult to do so, and the ants usually get them in the end."—[Probably the larva of one of the large African Anthias.—*Edward Newman*]

Paintings of Animals by the Bushmen. — Extract from a letter of the late Col. Tylden:—"I have been occasionally amused by the remains of rude paintings of animals, &c., which are to be found upon the rocks about the caves formerly frequented by the Bushmen. Some of the animals are really well represented, and nearly all are to be recognised. They are coloured with clays, &c., generally rather

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smaller; but in some cases, especially snakes, the size of life. Considering the extraordinarily degenerate state of a Bushman's cranium, compared with that of an European, these productions are singular, and would be an interesting fact to the phrenologist."

The Zoology of the Andaman Islands. By the Editor of the 'Indian Field.'

We learn from the 'Moulmein Advertiser' that "Dr. Walker is preparing a very interesting account of the Andaman people, furnished by a Pandy who has been domesticated amongst them for more than a year." Pandy's information will of course have to be well sifted; but it should not be difficult to eliminate truth from fable and exaggeration, or the flightiness of an Oriental imagination. We have therefore pleasure in anticipating some trustworthy revelations on the habits and mode of life of this remarkable wild tribe, one of the far-scattered remnants, as we hold, of a wide-spread primæval population, of no proved African origin, nor indeed greater probability of African descent than the negroes have of Oriental origin, but which races of higher culture and prowess would appear to have long since compelled to take refuge in mountain fastnesses or remote islands, where not a few of such remnants yet survive, including a population still in great force on the extensive and little-known island of Papua, or New Guinea (whence, of course, so denominated), and its vicinity. On the principal island of the neighbouring group of the Nicobars, such a race still inhabits the mountainous interior, and is stated to be ever at war with the coast population; which latter is derived obviously from the adjacent territories of Burma and Malasia.

Inclining strongly to these views, we do not venture to indulge the hope or expectation expressed in the recently-published Government Report on the Andaman Islands, with reference to their Negrillo inhabitants, that "to ascertain their manners and customs, and to establish their identity with any existing portion of the negro race, to which they clearly belong, would solve the mystery of ages, and lead to a knowledge of the probable manner in which Asiatic islands came to be occupied by an African people." This, we opine, is rather like "jumping to a conclusion." We are not at all surprised to learn that the individual captured by the expedition did not "comprehend a word of the several African dialects spoken by the Seedees in the service of the Peninsula and Oriental Company, with whom he was confronted." On the contrary, we should have been exceedingly astonished had he done so.

The inhabitants of the Andamans, we are told, "are dwarf Negrillos, strong and robust when their supply of food is abundant, as it was during the time of our visit; intensely black, and possessing most of the physical characters of the true negro, with the exception of the projection of the heel.

"The individual captured at Interview Island was singularly quiet and docile, imitated regularly the actions and gestures of those by whom he was surrounded, and never, from first to last, exhibited the smallest indication of ferocity." Of the vulgarly reputed cannibalism of the Andamanese there does not appear to be the slightest proof, but every indication that, however ancient and prevalent the notion, it is utterly unfounded; nor can we learn that any Negrillo tribe has been elsewhere convicted of the abomination.

Vague as may be the information derived from Ptolemy, from Marco Polo, and from the two Arab travellers of the ninth century of our era, we still gather sufficient, even from these imperfect records, to feel incredulous of the story in the 'Calcutta Monthly Register' for November, 1790, quoted in the Government Report. "We are told that when the Portuguese had a settlement near Pegue, two of their ships, with cargoes of slaves on board, amounting in number of men and women to three hundred, were cast away there; and as the inhabitants are of the Coffree caste [caste !], it must be allowed that probability favours this opinion or conjecture." It did so, perhaps, when so little was known of the Negrillos or Negritos of the Philippines and elsewhere, and when Ethnology was more completely in its infancy than at present. But we happen to have heard how the domestic pig found its way to the islands from a wrecked ship; whereas the fact is that the little wild pig of the Andamans (*Sus andamanensis*) is of a totally different species from the domestic porker, and peculiar (so far as hitherto known) to the Andaman Archipelago, though identical on the islands of Great and Little Andaman, which are separated by some thirty miles of sea. On conversing with a well-known gentleman who has often visited the Nicobar islands, and is familiar with their ordinary productions, we once asked him, by way of jest, how the potato came to grow wild on certain of the Nicobars, and were duly informed of the manner of its introduction. Indeed, it may be remarked that if a few domestic swine were actually to find their way on shore from a wrecked vessel, their tameness would at once betray them to the human inhabitants, and so lead to their immediate destruction. Besides which, the chances would be very great against there being an unmutilated boar amongst them, to continue the race if allowed the chance.

With some surprise we remark that not a word is said in the Government Report respecting the curious fact, that, whilst the pig is the only warm-blooded quadruped as yet determined on the islands, it proves to be of a species exceedingly different from any race of domestic swine, whether Indian or Chinese, and equally so from all the numerous wild swine of S.E. Asia and its Archipelago, with the two exceptions of Sus papuensis of New Guinea, and the curious pygmy hog of the sub-Himalayan sâl-forest, which is described by Mr. Hodgson by the name Porcula salvania. These three species differ from all the rest by their diminutive size, and externally by having a mere tubercle in place of a tail; while in the relative proportion of the molar teeth the difference is so considerable that Mr. Hodgson separated the one known to him as the type of a distinct division, styled by him Porcula.

Whether the little wild pig of the Andamans inhabits also the neighbouring group of the Nicobar islands remains to be ascertained; but the modern Nicobarians have domestic swine of a very large size, which they have doubtless obtained from the European shipping. There is a slight notice and very rude figure of the skull of the tiny hog, from the Little Andaman, in Jameson's 'Edinburgh New Philosophical Journal,' vol. xvi. (1826-7); but all that is stated of the animal occurs in the description of an Andamanese hut,—"Ranged in a row round the walls [!] were the smoked skulls of a diminutive hog," —a statement which, with the figure, serves to prove the existence of the species on that particular island. It is not unlikely, but rather the reverse, that it may yet prove to inhabit the forests of the neighbouring mainland, the zoology of which has not been much investigated; for be it remembered that its congener of the sub-Himalayan sâl-forests was long overlooked.

In the Preface to the Government Report we read that the Andamans "are extremely deficient in animal life, and the birds inhabiting them are comparatively few; but the reefs and bays abound in shell and other fish." Shell and other fish!—do not these constitute animal life in their way? But it is a vague method of writing, another instance of which we have just chanced to notice in Ogle's book on 'Western Australia,' where the author tells us that "the fish are without number, from the whale to the shrimp." In a late number of the 'Illustrated London News' we find a seal figured as "the talking and acting *fish*;" and in like manner the flying fox might as well be termed a *bird*, albeit surely not of the feathered class; and we might adopt the Indian and Chinese fancy of classifying the Manis, or Pangolin, as a fish! "Shell-fish" are more than once mentioned in the Report, meaning alike crustaceans and shelled mollusks; and we read also of the coral "insect." "The only mammal whose existence we ascertained was the pig, their skulls being found suspended in the huts of the savages." *The* pig, as before remarked, naturally elicits the question, What sort of pig?—it being not even mentioned whether wild or tame! But, being wild, it surely merited an inquiry regarding its particular species. In like manner we read of "*the* bamboo, *the* rattan, and *the* cane." The last, we apprehend, must mean some kind of rattan (*Calamus*); but, the precise species not being identified (so far as appears), would it not have been better to have employed the expression "a species of," or "species of bamboo and of rattan"? A Frenchman or a German would have been far more explicit in his statements; and the reader, desirous of accurate information, is disappointed at such want of precision.

The only additional mammal as yet determined from the Andamans is the dugong (*Halicore indicus*), a marine creature, one of the Syrenia, or Cetacea herbivora of Cuvier, some bones of which (now in the Asiatic Society's museum) have been obtained from an Andamanese hut; and this is the most northern locality in which we as yet know of its occurrence.

Rats, however, there certainly are, and their burrows have been remarked by recent observers; but rats of some kind are not of recent introduction. The writer in the 'Calcutta Monthly Register' (1790) mentions "wild hogs and rats (the only animals that were perceived in that country;" and Lieutenant Colebrooke notices monkeys in addition, a statement which greatly needs confirmation. We are credibly informed, however, of the loris (or so-called "sloth" of Europeans, "little Bradypus" of Helfer!) having been observed on the island of Preparis, situate to the north of the Andamans in a line with Cape Negrais. Bats may of course be looked for, probably a shrew or two, perhaps a Tupaia, and squirrels and flying squirrels; but, unless bats, not any of the rest would appear to have been hitherto remarked at Port Blair. Even the alleged rat may not improbably turn out to be a species of Rhizomys, or bamboo rat.*

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* Since writing the above we have taken a mouse from the stomach of a venomous snake from Port Blair, the Trigonocephalus Cantori (heretofore only known from the Nicobars). So far as it can be made out the mouse is the M. Manei, which is the common house mouse of India. Another mammal since reported, seemingly a Tupaia. In an extract from a letter from Port Blair, dated June 22, and published in the 'Delhi Gazette' for July 15, it is stated that "the settlers had caught another small

According to Colonel Symes, "Birds are not numerous in Great Andaman; doves, parraquets, and the Indian crow are the most common species." Which Indian crow? Not the common Calcutta species, but the Indian black crow (*Corvus culminatus*), which is popularly miscalled the "raven." The doves and parraquets are as yet undetermined, though a large fruit pigeon (*Carpophaga sylvatica*) abounds. We have seen only one decided bird novelty from Port Blair, which is a peculiar sháma (*Kittacincla albiventris*), like our favourite Indian songster, but having a pure white belly, and the middle tail-feathers being much elongated beyond the next pair. We have been assured that it is an equally fine musician.

From the Report we learn that "At old Port Cornwallis, where water abounds, there were numerous birds; but our occupations did not permit of any collection worthy of notice being made." We should have been glad to learn, however, what actually were collected. Novelties among water-fowl and wading-birds are not to be expected, nor among the birds of prey, of which last we have seen two species from Port Blair, both common in the neighbouring countries,—the Hæmatornis cheela and the Blagrus leucogaster; but the parrots, the pigeons, and the small perching birds are tolerably sure to yield some novelties, to judge from analogy with the neighbouring group of the Nicobars; and at Port Blair a pretty species of the starling family (*Temenuchus erythropygia*) abounds, a bird previously observed only in the Nicobars. The Andaman oriole, or "mango bird," appears to be the Oriolus coronatus of the great Asiatic Archipelago; and we have never seen this bird from the adjacent countries, the fine oriole of the Nicobars (*O. macrourus*) having hitherto been met with only upon those islands. Another common species at Port Blair, which was originally discovered in the Nicobars, is a fine redbreasted thrush (*Geocichla innotata*), doubtless the "redbreast" of Mr. Quigley; and we have seen other species that occur there as a matter of course; among them the large "hill maina" (*Gracula javanica*), which is also common in the Nicobar islands. The splendid Irena puella is an inhabitant of the Andaman forests. There is little use in quoting such vague enumerations as

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quadruped on the island, somewhat like a mungoose, but its genus has not been determined,—in all probability a Tupaia, a small squirrel-like animal, with peaked snout and insectivorous dentition. In one of the early volumes of the 'Calcutta Journal of Natural History' a Tupaia is actually figured for a species of mungoose (*Herpestes*)!

those of Mr. Quigley (*vide* Report, pp. 60, 65); and we have hitherto always supposed that the Trochilidæ, or humming birds, were quite peculiar to America! Even Lieut. Colebrooke, however, tells us that "a species of humming bird, whose notes are not unlike those of the cuckoo, is frequently heard in the night!" But, for that matter, we might cite a quasi-scientific book that treats cursorily of the zoology of the province of Kemáon, wherein we read, amid other utter rubbish, of "Trochilus, or humming bird. In Kemáon this is a very splendid genus, but so numerous that it would be impossible to enter into an enumeration of the species"!—two or three species, and scarcely more, of Nectariniidæ being here intended.

If the very remarkable genus Megapodius ever existed in the Andamans, as it still does in the Nicobars, it is likely to have been extirpated by the human inhabitants, who would dig the eggs from the mounds, and so eventually exterminate the race; inasmuch as it is not likely to have penetrated far inland, especially in a dense forest. Such a forest may be inhabited by Psittacidæ, Bucerotidæ, Picidæ, Bucconidæ, Cuculidæ, Trogonidæ, Batrachostomi (perhaps), and Columbidæ; but the small perching tribes would be little seen until clearance had been effected, and then we doubt if the islands would be remarkable for paucity of species! At present our knowledge of the Ornithology of the Andamans is meagre in the extreme.*

Of reptiles we have seen as yet but four—a lizard, apparently a female of a second species of the remarkable genus Dilophyrus; a particularly interesting small gecko (*Phelsuma andamanense*, also new); a venomous snake (*Trigonocephalus Cantori*), which previously was known only from the Nicobar islands; and a harmless tree-snake, common in the neighbouring countries, the Dendrophis picta. In the inferior classes the reader will probably not be much interested; and we shall therefore merely remark that the most notable discovery is that of a superb large land-crab, which there can be little doubt contributes, and probably to no small extent, to the ordinary food of the Andaman savages.

No fresh-water fishes have been seen as yet; but some little mud-skippers (*Periopthalmus*), and a curious new genus of them, which has been styled Andamia; also a new type of fresh-water crab, and a few insects, with the common large centipede (*Scolopendra morsitans*), which seems to be universally distributed in hot countries. The marine productions are of course those of the Bay generally; and a better locality for studying and collecting them there cannot be. The products of the sea, moreover, are obtained with comparative facility; the implacable and ever-vigilant hostility of the islanders proving a serious obstacle to the collection of the animal inhabitants of the land.

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* The species as yet determined with certainty are Hæmatornis cheela, Blagrus leucogaster, Todirhamphus collaris, Halcyon coromander, H. smyrnensis, Corvus culminatus, Gracula javanica, Temenuchus erythropygia, Tephrodornis grisola, Geocichla innotata, Copsychus saularis, Kittacincla albiventris (new), Artamus leucoryhynchos, Edolius retifer, Pericrocotus peregrinus, Pycnonotus jocosus (Malayan var.), Irena puella (Indian var.), Oriolus coronatus, Carpophaga sylvatica, Calænas nicobaricus (from the Cocos), and Anous stolida.

Birds of Canada observed near Kingston during the Spring of 1858.

By Captain HENRY HADFIELD.

(Concluded from p. 6709).

Canada Nuthatch (Torchepot de la Canada of Buffon). April 16th. Shot what I believe to be a bird of this species, it having a blue head, and differing materially from the common redbellied blackcapped nuthatch, which has the upper part of the head of a pure glossy black, the sides and the whole of the lower parts rusty brown; whereas the former has the crown bluish gray like the back, with numerous small longitudinal dark brown spots. The white line over the eye passes quite round the forehead without any interruption; there is also considerably more white about the cheeks and throat, which, meeting at the nape, forms a collar; the breast, sides and belly are of a grayish white tinged with rufous. The primary quills, as in the other species, are of a glossy hair-brown, but they have considerably less grayish white on the margins; the first is about a quarter the length of the second; the third slightly exceeds the fourth, whereas the latter feather is the longest in the redbellied nuthatch. The former has the secondaries broadly tipped with white; but what forms the chief distinction, and I think proves it to be a different species, is that the wing is rounded; both primaries and secondaries being greatly *incurved*; the outer webs, from the second to the fifth quill inclusive, are but slightly indented; whereas in the other species the whole of the primaries are emarginate and *recurved*. In the present species both primaries and secondaries are broader than in the redbellied nuthatch, and the inner secondaries are more elongated. The tail in both kinds is almost similar, but the white patches on the three exterior feathers are smaller, and do not extend to the outer web on the second quill of the Canada nuthatch, which, though of the same length and extent, is a somewhat slighter bird than the other. The head being blue, and the wing of a different shape, there can be no doubt of its being a distinct species, though Wilson seems to hesitate in pronouncing it to be so, for he remarks, vol. ii. p. 203, "Buffon's Torchepot de la Canada is either a young bird of the present species (Redbellied blackcapped nuthatch) in its imperfect plumage, or a different sort that rarely visits the United States, probably the latter, as the tail and the head appear of the same bluish gray or lead-colour as the back. The young birds of this species (redbellied), it may be observed, have also the crown of a lead-colour during the first season."

In my note on the habits of the European nuthatch (Zool. 5684) I remarked:—"The bill, although undoubtedly strong, I should not at first sight have considered sufficiently so either to have perforated or cracked a nut, unless it had been so stated on the best authority; besides, if constantly used in drilling holes through nuts, it would necessarily have become, I should have thought, in some degree blunted thereby; whereas the bills of all these birds are very acute, and the upper mandible exceeding the lower in length, which seems unlikely to be the case if constantly brought in contact with so hard and polished a surface as that of the nut." And I am glad to find my opinion corroborated by so great an authority as Wilson, who, in remarking on the habits of the Carolina nuthatch, says, "The name 'nuthatch' has been bestowed on this family of birds from their supposed practice of breaking nuts by repeated hatchings or hammerings with their bills. Soft-shelled nuts, such as chestnuts, chinkopins and hazel-nuts, they may probably be able to demolish, though I have never yet seen them so engaged; but it must be rather in search of maggots that sometimes breed there than for the kernel." "From the great numbers that I have opened at all seasons of the year, I have every reason to believe that ants, bugs, small seeds, insects and their larvæ form their chief subsistence, such matters alone being uniformly found in their stomachs. Neither can I see what necessity they could have to circumambulate the trunks of trees with such indefatigable and restless diligence, while bushels of nuts lay scattered round their roots." Although I have skinned several, I omitted to examine the contents of the stomachs; but there can be no doubt of their being insect-feeders, though they may occasionally amuse themselves with a nut. This bird is a tree-creeper, and closely allied to the woodpecker, but the latter has the bill worn and blunted, though the decayed bark and wood perforated cannot offer the resistance that the hard and polished surface of the nut does.

Blueeyed Yellow Warbler (*Sylvia citrinella*). May 9th. Saw three of these elegant little birds among the willows in my garden; had noticed one on the 6th. It is undoubtedly a true willow wren, though differing somewhat from the European in shape and colour.

Blue Yellowback Warbler (*Sylvia pusilla*). May 13th. Shot one of these diminutive birds, a handsome male, measuring 4¼ inches in length, and 7 inches in extent of wings.

Blackthroated Blue Warbler (*Sylvia canadensis*). May 13th. Shot one of these rather rare birds (length 5 inches, extent of wings 6¾ wing from flexure 2½ inches), of which Wilson says, "It is highly probable that they breed in Canada; but the summer residents among the feathered race, on that part of the Continent, are little known or attended to;" "and unless there should arrive an order from England for a cargo of skins of warblers and flycatchers, sufficient to make them an object worth speculation, we are likely to know as little of them hereafter as at present." Later in the month I saw another that had been sent into Kingston to be stuffed; so I am inclined to think they breed in the country.

Baltimore Oriole (*Icterus baltimorus*). May 13th. Procured one of these handsome but common birds.

Whitecrowned Bunting (*Emberiza leucophrys*). May 14th. Saw two of these rare and beautiful birds in a tree in the garden; succeeded in shooting one, which proved to be the male.

American Woodcock (*Scolopax minor*). May 15th. Found two of these diminutive woodcocks in a swampy bit of ground, so closely covered with alders and brushwood that it was a difficult matter to get a shot at them; but, both being eventually killed, they proved to be males. They were highly prized, for although a common bird they were the first I had seen. The largest measured 11 inches 4-tenths in length, and 17 inches in extent of wings.

Wood Thrush (*Turdus melodus*). May 15th. Shot one of these fine songsters. I found it at the edge of a wood, where it might have remained concealed and unobserved among the thick foliage, had it not been betrayed by its song. This is one of the few birds of North America whose song is deserving of the name. Although a handsome bird, the plumage is not so rich as that of the ferruginous thrush. It measures 7¾ inches in length, and 13 inches in extent of wings.

Ferruginous Thrush (*Turdus rufus*). May 18th. When in quest of birds near an extensive marsh and cedar swamp, I saw and heard, for the first time, this large and elegant thrush, which from the clearness of its notes I at first took for the wood thrush; but in shape, colour and size it differs widely, having a more elongated tail, richer plumage, and greater weight.

Canada or Whitefronted Swallow (*Hirundo lunifrons*). May 21st. Saw a number of these beautiful little swallows near Toronto, the first I had observed since my arrival in Canada. It was not until after several unsuccessful attempts that I succeeded in shooting one; whether this arose from over-excitement, or was caused by the unsteady flight of the bird, it is difficult to determine, but they appeared to be constantly wheeling in narrow circles, frequently within a few yards of one, and then would suddenly disappear behind the trees. I never knew a bird more difficult to shoot, except perhaps a jack snipe; as to the swift-flying Hirundo pelasgia, I had found it comparatively easy. I merely secured one specimen, but had a few days before procured another near Kingston, the only one seen during my residence there, possibly the limestone formation being unsuited to its habits, as it is said to breed in the cliffs of barren grounds.

Sand Martin (*Hirundo riparia*). May 21st. Found these birds very numerous in the sand-banks and cliffs near Hamilton; secured some specimens. Although this town, as well as Kingston, is on Lake Ontario, I never observed a sand martin at the latter place, owing no doubt to the different nature of the soil. They vary much in size, the largest being 5 inches 3-tenths in length, and 11 inches 2-tenths in extent of wings; the smallest measuring but 4 inches 9-tenths in length, and 10 inches 2-tenths in extent.

Cat Bird (*Turdus lividus*). May 21st. Saw two of these birds, male and female, near Toronto, in some bushes skirting a stream; shot the latter. It is not, I think, a very common species; at least I observed but few the previous autumn, and those were invariably in low, swampy situations.

Tyrant Flycatcher, or King Bird (*Muscicapa tyrannus*). May 22nd. Obtained a specimen; length 8¾ inches, extent of wings 12½ inches. This is a common species.

Great Tern (*Sterna Hirundo*). May 22nd. Obtained a specimen; extent of wings 31¾ inches.

Redeyed Flycatcher (*Muscicapa olivacea*). May 24th. Shot one of these elegant flycatchers, which are so closely allied to the warblers that had it not been for the slightly decurved upper mandible I should have set them down as such. The tarsus is unusually long, namely, 7-tenths of an inch; the length of the bird is 5¾ inches; in colour it somewhat resembles the wood wren.

Chestnutsided Warbler (*Sylvia pennsylvanica*). May 24th. Shot one of these rather rare and beautiful birds; it proved to be a handsome male; length 5 inches, extent of wings 7¾ inches, wing from flexure 2½ inches. I subsequently saw another that had been recently killed. As this bird, according to Wilson, passes through Pennsylvania in April, or early in May, there can be little doubt of its breeding in Canada. The bill is rather stout and slightly decurved, and this bird, both in form and habits, seems allied to the tits.

Blackburnian Warbler (*Sylvia Blackburniæ*). May 24th. Shot one of these rare birds, the only one I ever saw; length 4¾ inches, extent of wings 7½ inches, wing from flexure 2 inches 4-tenths. This bird also appears to migrate northwards in May, returning in September, consequently must breed in Canada. Wilson remarks, "Of the nest and habits of this bird I can give no account, as there are not more than one or two of these birds to be found here in a season, even with the most diligent search." The bill of this species is slighter and less decurved than that of the preceding, which it seems to resemble in habits, frequenting the upper branches of the fir trees.

Scarlet Tanager (*Tanagra rubra*). May 24th. Shot a handsome adult male (had previously observed one). Although not a very common species, I saw several in a small wood about two miles from the town, on the above day; the splendid red and black plumage of the males making them very conspicuous, and though but 7 inches in length and 11½ in extent of wings they appear much larger (Wilson gives 6½ inches as the length, and 10½ as the extent of wings). The females are of a yellowish olive-green, with dusky quills and tail-feathers, margined with greenish yellow; the under parts yellow tinged with green, except at the vent, where the feathers (including the under tail-coverts) are of a pure bright yellow. Except in size and shape they bear no resemblance to the males, and might be taken for another species until closely examined and compared. I do not think so great a disparity exists between the male and female of any of our European birds.

Great Horned Owl (*Strix virginiana*). May 25th. A fine bird of this species was brought to me for sale; it had been badly wounded, having lost one eye, and appeared in a dying state; and it being imagined that pressure alone would have extinguished life, it was placed on its back, and stood on, but its muscular power was still so great that it succeeded in freeing itself of the load, probably some 130 lbs. It measured 22 inches in length, 49 inches in extent of wings, and 15½ inches from flexure, and weighed 4lbs.; eye dark blue; iris yellow.

Humming Bird (*Trochilus colubris*). May. Towards the end of the month several of these birds were seen by my sons, flitting about in a hawthorn bush (a common shrub, not unlike our own, but the thorns and berries are larger). It was found impossible to count them, as they were in perpetual motion; but my sons are agreed in thinking that there must have been twenty or more congregated in this single bush, possibly for the purpose of roosting, as it was late in the day when they were discovered. Probably they had recently migrated, as not one had I observed, although out early and late collecting specimens to bring home with me. During their short stay in Canada, where they breed, they frequent the flower gardens in and near the towns and villages; but I never met with one, either in the fields or woods.

Rice Bunting (*Emberiza oryzivora*). May. Procured a specimen, the first I had seen, though a common species.

Winter Wren (*Sylvia troglodytes*). May. Saw one of these common birds. My gun having missed fire more than once, it was allowed to escape; but as it was very tame, creeping among the decaying trunks of the fallen timber, I had a good opportunity of observing it. Although Wilson seems to think it is "the same species as the common domestic wren of Britain," one that I examined in the autumn was decidedly a much darker bird than the common European wren.

Piedbilled Dobchick (*Podiceps carolinensis*). One was shot by my son.

Buffelheaded Duck (*Anas albecola*). Saw one recently killed. Rather a common species.

Hooded Merganser (*Mergus cucullatus*). Saw several up a creek; endeavoured to approach them in a boat, but did not succeed in getting within shot. When disturbed they made for the lake. Their flight is rapid.

Dusky Duck (*Anas obscura*). There have been great numbers of these ducks on the lake since the breaking up of the ice. It is a very common species. I also observed large flocks late in the autumn. Several other kinds of ducks and teal were occasionally seen, but not identified.

American Bittern (*Ardea minor*). Observed one rise out of a marsh.

Remarks.—Gulls, rails, divers, hawks, and numerous other species were observed, but not identified; so it must not be inferred that the above list includes anything like the whole of the migratory birds that may have arrived up to the 29th of May, the date of my leaving Canada; for not only must many have escaped my notice, but the immediate neighbourhood of a town is not the most desirable locality for carrying on one's observations on any but the swallow tribe and a few others. Most of the birds seen or collected were found within a very narrow range, and within two miles of the town; and I intend, for the benefit of any ornithologist who may chance to stray to that part of the country, to point out the exact position of the secluded and sheltered glen in which the greater part of my specimens were collected.

Quitting the town of Kingston by the upper Portsmouth road, leaving the Cathedral on the right and the splendid new Court-house on the left, you proceed for nearly a mile on the usual raised boarded foot-way, through level, half-cultivated fields almost without a tree or even a stump; then, leaving the high road, and striking off obliquely to the right for half a mile or more over a barren-looking common, dotted here and there with clumps of the everlasting fir, the first wood or enclosure is reached (where a few birds only are likely to be met with, there being neither underwood nor water), but not quite so smoothly as on paper, there being endless snake-fences to be clambered over, no easy matter when encumbered by shot and gun, to say nothing of heavy boots (rendered imperatively necessary by the swampy and spongy nature of the soil in Canada, which would puzzle the ingenuity of the most skilful agriculturist to drain, the country being generally a dead level); and ornithologists afflicted with obesity, if such excitable beings ever are so, should pause ere they trust themselves astride on the topmost bars of suspicious-looking snake-fences, as they are in these old enclosures very apt to give way, when great is the fall thereof. I have in my mind's eye a vivid recollection of a scene of the sort, but the sufferer, fortunately, was of the leaner kind, or the fall of some five or six feet, gun in hand, might have knocked out his own brains as well as those of the much-prized specimen he held. But supposing these intolerable zigzag barricades to be surmounted, passing a "clearance" or two, *i. e.*, fields literally covered with charred stumps, the glade is approached, its sloping banks margined with a profusion of scrubby underwood and stunted hawthorn-bushes. In the back-ground trees of various kinds are seen, though, the soil being shallow and rocky, they are somewhat dwarfish in growth; but their spreading branches and thick foliage serve to shelter and protect the various kinds of birds now daily arriving from the South, and which seemingly make this their resting place before dispersing to their breeding stations or spreading themselves over the country. At the head of the vale is a swamp, swarming with frogs, or marsh nightingales as our neighbours call them, whose notes it would be in vain to attempt to describe, there being something unearthly about them; suffice it to say that it is overpowering, and unlike that of frogs in any other quarter of the globe. The prostrate trunks of some gigantic trees in different stages of decay lie half-embedded in the marsh, but there are still a few of equal size standing erect, their decaying and perforated trunks the abode of nuthatches and woodpeckers, which may be seen peering out at the intruders, and if unmolested will present themselves on the trunks or on the blasted weather-beaten limbs. Lower down the glen there is the source of a small rivulet, which, winding through the rocky and broken ground, falls into the lake at the pretty and sheltered village of Portsmouth. But returning to the sloping woods that skirt the upper valley, where many an hour was passed in close and diligent search after newly-arrived species: here warmth and shelter are doubtless the chief attractions, but the running stream must be preferred to the stagnant pools or swamps that more usually abound. The "bush" in reality is no bush at all, but forests of lofty trees, with bare and branchless trunk, canopied with dense foliage impervious to the sun; and on the leaf-covered ground beneath there is neither shrub nor bramble that could afford birds shelter or screen their nests. Though so narrow and confined, there is in this glen a diversity of soil; in the more elevated portions of it the blue limestone crops out in all directions, and very peculiar-looking it is, having occasionally the appearance of gigantic slabs of blue slate, so even and horizontal that it might be imagined this favoured land had escaped the floods and convulsions that in ages past have torn and rent our globe, leaving it in a state of chaos. But suddenly the scene changes: the dwarfish growth is succeeded by lofty beech, elm, and other forest trees, showing the rich nature of the soil. Here a few pigeons may be found; some small birds too on the outskirts of the wood, where sun and light have caused the trees to throw out lateral branches, and promoted the growth of underwood and brier. The notes of the thrush may here be heard early and late, but we listen in vain for those of any other songsters. Having heard the ferruginous thrush (French mocking bird) and the wood thrush, I am inclined to think the former the best songster, but neither, in my opinion, equals our own mavis either in power or compass. Chirpings and occasional subdued warblings we may and do hear, but nothing approaching to a song; so we might be inclined to set down Wilson's description as an overdrawn, if not a figurative one, did we not bear in mind that the far-famed mocking bird, together with many a songster that charmed the enthusiastic ornithologist of the West (whose early impressions of his native warblers must have been well-nigh obliterated) are never met with north of St. Lawrence.

In returning to the town by the lower road which skirts the lake, blueeyed warblers (like our willow wrens) may be seen flitting among the branches of the lofty poplars (probably planted by the early French settlers, as many of them are now falling into decay), and a few gulls and terns may be observed soaring over the water or reposing on its surface.

H. W. HADFIELD.

Lossiemouth, Elgin, N.B.

Note on the Habits of the Longeared Owl (Strix otus). — Having paid successful attention to this species for the last two years, I am in a position to state several facts which I believe are little kown. Large, sombre and retired woods, in which the various species of evergreen fir are freely interspersed, are the favourite haunts of the longeared owl. When a pair are in possession of such a wood they seldom leave it permanently, unless driven by some very powerful cause. They spend the day in sleep, and come forth at dusk to search for prey. An evergreen fir, where such is available, is the most esteemed roosting place. They perch in an erect position; and when on one of the larger limbs of a tree of this description they sometimes get so close to the bole that an ordinary observer would mistake them for a crooked or enlarged portion, so nearly do they approximate it in colour. Occasionally, also, the thick stem of an old gorse bush will be selected as a roost. The same dormitory is seldom resorted to for more than a few days consecutively. Their hearing is so acute that even a very stealthy approach will awake them. I have endeavoured to form an intimate acquaintance with them, but without success. From whatever point I tried to observe them, the head always turned and the eyes were towards me. Generally they are wary, and will fly as an unwelcome intruder advances. When disturbed, the tufts on the head are raised, and maintained in that position while the cause continues. The food of the longeared owls consists of mice, with an occasional finch. I have not known anything larger to be taken. With regard to the way in which they capture birds, an observant and trustworthy countryman told me that he had watched them flying about trees and bushes, and following the course of their branches, at dusk; his idea being that they were looking for birds, though he never saw them catch any. I have not seen this movement, but believe the man's statement, and think it original. This owl is seldom its own architect, but generally selects and repairs the old nest of a hawk, magpie or wood pigeon. The only instance within my knowledge in which a pair may have built their own was in last spring. I discovered three or four young ones, still unable to fly, scattered at short distances in a place where no nest large enough to contain them could be found. Dead bracken was in profusion everywhere about, and gorse and small black firs were growing up and down. Now, I think these birds must have been reared on a prepared bed of decaying vegetable matter, either under a fir or amongst the gorse. When they could fly the parents led them to a neighbouring wood, and continued to feed them for several weeks. I state the facts of the case, and leave others to judge for themselves. When a pair of longeared owls take possession of a nest, usually early in March, they roost by it until the first egg is laid, about the middle of the month, when incubation at once commences. Frequently the full complement of eggs—two, three or four in number—are laid on consecutive days, whilst occasionally a week or so may intervene between; for instance, the second and future ones. As a proof of this, I took a nest last spring which contained four eggs; of these one was fresh, as though laid that morning; a second was slightly sitten, whilst the third and fourth were still more so, each differing a little in degree. The difference between each was as much as a day might make. I have previously seen an old bird sitting on her first egg. A second nest which I took contained three eggs; of these two were deeply sitten, whilst the third was only slightly so. These facts seem conclusive, whilst their beating the trees and bushes, as above related, will tend to show that they take birds off roost.—*J. F. Brockholes; 16, Cleveland Street, Birkenhead, October 3.*

Notes on the Mountain Birds of Jamaica.

By W. Osburn, Esq.*

"Freeman's Hall, Trelawny, Jamaica,
"September 6, 1859.

"Dear Sir,—I have in my former letters made frequent allusion to that very remarkable bird Acanthylis collaris; and as, during some rainy weather last month, I had unusual opportunities for observing them, I propose to devote this letter to some further remarks. On the 20th of August last they came close to the house, when I procured one. About an hour and a half afterwards my servant again reported them close over, when I got another, this time very fortunately only breaking the wing, so that I was able to observe its actions much more closely. Having washed and restored the broken wing as well as possible, I let it go on the polished floor; but notwithstanding this unfavourable surface it scuffled off, the tip of the wing and tail touching the floor, at a great rate, taking refuge in a dark corner. On being taken up it made a loud and very harsh screeching, quite distinct from the ordinary scream. On putting it in a position where it could see out, it stretched its neck and made several attempts to rise, tumbling over each time; so that without my experience at Grand Vale I should certainly have concluded it could rise from a flat surface. During the whole of this time it made no attempt to stand on the foot, resting always upon the points of the curved claws and the heel-bone.

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* Communicated by P. H. Gosse, Esq., F.R.S.

In no position I could place the bird did the sole of the foot rest on a flat surface, even conjointly with the heel-bone; so that it cannot be said to walk, but merely scuffles along with the assistance of the wings, though it can thus make considerable way. I then put it to the wall, but found it had no secure hold on the finished plastering of the room. But on being placed on a roughened wall outside, it immediately ran up with such surprising quickness that I was obliged hastily to secure it. The tail was partially spread, so that the points were even pressed against the wall; but what chiefly surprised me was that during its progress I could see the feet in action on each side of the neck. On placing it against the wall with an object above it, it remained in an attitude of perfect repose. The points of the tail rested against the wall, as we should suppose; but the feet were hitched so far upwards as to be only about half an inch below the bird's eyes; the heel-bone I could see resting on the wall just below the flexure, so that the femur, tibia and tarsus formed a single straight line. It is obvious that from gravitation this straight line from the foot to the head of the femur would always tend to the vertical, and thus the ventral surface of the bird would be inconveniently pressed against the surface clung to. But this is entirely prevented by the salient nodosity at the heel, which intervenes and keeps the leg off, forming also another point of support. The powerful but elastic shafts of the tail lend additional aid. I found a recent bird could, after death, be supported on the tail alone, provided it were prevented from swaying over laterally. I unfortunately omitted to try whether it could perch, but I thought of it immediately after I had killed it, and, placing my finger in the claws, pressed them towards the breast. The toes bent as usual, but the grasp was scarcely perceptible. I am inclined to think they could not perch, at any rate without the voluntary action of the muscles; they could not sleep on a branch in fact. But if, before the limb become rigid, the leg is straightened and stretched forward in the position when clinging, then the foot remains perfectly pliable; but a very violent flexure takes place between the ultimate and penultimate phalanges of all four toes, so strong that the points of the claws are doubled upon the sole, and cannot be forced back so long as the leg is kept in this position, without the exertion of far greater force than the bird's weight could bring to bear. The hallux is lateral; it will form a right angle with the *internal* fore toe with perfect ease, but cannot be brought completely forwards without manifest violence; its most usual position with the living bird is antagonistic with the external toe, and there seems some reason for this. As the bird hung, the distance between the feet was greater than the space between the femur joints, as of course it almost necessarily must be. Thus the drag on each leg is slightly oblique in opposite directions, and the hallux therefore is opposed to the direction of pressure, or very nearly so. These birds can therefore cling with perfect security to any vertical surface rough enough to give hold to their powerful claws, and without any continuous effort. You will observe from this that your correspondent was in error when he stated that the tarsus could not be bent beyond 28° with the tibia. It is obvious, if this were the case, that the bird's leg could never be altered from the position of perching, *i. e.*, the femur directed forwards, the tibia backwards, and the tarsus forwards again. This does support the bird when the direction of gravitation is perpendicular to the axis of the body or approaching it, but with a clinging bird this direction of course coincides with it. If the bird attempted to cling with the leg in this position, the claws, which give the point of suspension, would be very little in advance of the posterior margin of the sternum. Thus the head, the greater part of the sternum, the viscera it encloses, and the powerful muscles which cover it, by far the heaviest portion of the bird, would be *above* the point of suspension. Its protuberant breast would prevent its throwing this weight *on* the claws; and we can hardly imagine that, thus circumstanced, even the powerful tail would prevent its fall backwards. But by placing the feet forwards the whole body is *below* the points of suspension; the head only, or a portion of it (for the neck is drawn in when the repose is complete), is above the claws. This inclination to climb, as a means of escape and safety, was so strong that it overcame every other. On replacing the bird on the floor it hurried to me and ran up my clothes, taking refuge in the skirts of my coat. I showed one of my skins to an old hog-hunter, who assured me he had often seen them fly out of caves where, during their long expeditions, these men stop for shelter or rest. I took care he should not confound it with Hirundo pœciloma, of which I do not think there was much danger.

"I remarked in my last letter that these birds, from their occasional appearance, and their uncertain stay in any one spot, do not, like our other Hirundines, seem to hunt over a circumscribed locality, but explore large districts. The little valley which cleaves through the limestone down to the red conglomerate, in which this house stands, consists of about a hundred acres of pasturage. It possesses some unusual advantages for the observation of Hirundines; for though scattered clearings occur to some distance on each side the road from the lowlands after it leaves the lower range, the forest suddenly approaches on either side at the gates leading to the house, and, with this exception, closely hems in the whole pasturage. So far as my observations go, no Hirundine goes in or over the forest for food; H. pœciloma ventures the furthest, but I have never seen it exceed the pathways a few hundred yards from the edge. I would estimate our usual allowance for these isolated pastures at about twenty H. pœciloma, the same number of Progne, and two or three pairs of H. euchrysea, rarely all these together; for many hours in the day not a single bird is visible, but still small numbers look round from time to time. Early in the morning they are almost always busy on the western hill; towards evening the eastern hill and the river beneath it have more attractions. On dissection of the stomachs of any of these three species of birds, we shall arrive at very much the same result: five or six species of insects, small beetles, small Ichneumonidæ, &c., with perhaps one large plant-bug; in another, shot soon after, many insects are the same, but some different, and the plant-bug is replaced by two small bees; in Progne the bees will be more numerous, but accompanied by many small insects. So that though an expert entomologist (and I feel every ornithologist who wishes to progress ought to know at any rate something about the kindred science) might be able to say with certainty, this bird has been shooting round the mangos, that has been skimming over the grass,—there would be no marked characteristic deducible, save that these birds evidently hawked over a certain space, and took any suitable insect that happened to come in their way; in fact, that they were local feeders. But in the case of Acanthylis collaris the results are very different. I give four cases of birds, for the most part shot at great intervals, both as to time and locality:—

"Stomach examined March 6, 1858. A small species of Coleoptera, with a few of a second species, and one large insect.

"Stomach examined August 1, 1859. The winged females of a very small species of ant, a few other insects, and one or two bees.

"Stomachs examined August 20, 1859. First bird: numerous small green beetles, one or two bees, and six wasps whole and just swallowed, which I could not distinguish from a specimen of Polistes rubiginosa? building in the verandah. Second bird, an hour and a half later: traces of the same small beetles but slight, antennæ of a Capricorn beetle, and a mass composed of disjointed segments, empty legs, thoraces of some wasps; little clots were composed entirely of wings folded longitudinally; there were about thirty heads, which probably helped to digest the rest.

"We have thus, I think, very good evidence that these great swifts do not content themselves with the insects which a single locality may furnish, but search for large congregated swarms,—are swarm-destroyers. And this quite conforms with the irregularity of stay on any particular spot they visit. Some very remarkable points with regard to their mode of finding these swarms have latterly much attracted my attention. Let me give two examples. On the 20th of August, just before I shot the first bird, I had heard the column coming up. A good number of Progne were skimming low over a grass-covered mound in the pasture, of about an acre and a half in extent, and two of the swifts with them, for they always join and explore a flock of another species. Soon the number increased, and in a short time the column had disappeared, and a hundred and fifty or two hundred birds were dashing in every direction over the spot. They continued in different parts of the meadow adjoining the hillock, till I shot the next. On the 3rd instant I heard them again coming, but this time from the forest above. Just as I got out, the column, composed of numerous birds, descended and deployed over the meadow, but I presume found nothing, for they speedily formed again, gyrating slowly and moving along the western ridge, thus approaching the house, Though it was still distant three hundred or four hundred yards, several birds were shooting in an impetuous, irregular way over the house round the neighbouring trees, dashing even through the yard, without any apparent object rising to some height, then darting up the river course for a great distance, and back again. As the column progressed along the ridge, which it did very slowly, a man walking along the path would have arrived opposite the house before it. There skimming birds became more numerous; perhaps ten or twelve were over the yard and house at once, and the whole space between the house and the ridge was equally densely occupied by great numbers of birds shooting about low, in the same wild, irregular manner. The column stopped a little, and then moved in the same direction. It now began to leave the house, and the skimming birds became fewer. If one was selected, and its motions watched attentively a little, it would be evident that, notwithstanding its irregularity and amazing rapidity, its deviations did not prevent it from steadily keeping after the column. As this passed out of our little valley, and became scarcely visible over the intervening ridge, now one and then another bird might be seen darting after it in a straight line, evidently intent only on coming up with it. Now, if it be considered that we have here a swift of very extraordinary size which does not, as might be supposed, secure a sufficient amount of prey by hunting in small parties, but, notwithstanding its size, wonderful activity, and the voracity which these imply, hunts after its prey in very large numbers, it will be understood that the ordinary produce of insects of one locality is not sufficient, especially in an island where I have your authority for saying insects are by no means in extraordinary abundance. It is absolutely indispensable to the flock that they should seek for swarms; but for this, it will be seen, extraordinary obstacles are to be overcome. In a large flock of gregarious birds, which have simply to rise to a certain height, survey the country beneath, and then, selecting some large geographical object, descend and feed, their cries and ordinary powers of vision are quite sufficient to keep the whole flock together; but with a number of birds seeking swarms of insects the case is widely different. No powers of vision we have any cognizance of could possibly enable them to discover swarms half a mile off; indeed, there is abundant evidence they do not see them till close upon them. The birds then would be obliged to beat over immense districts, following a small number of leaders if they are to keep together,—a mode of hunting evidently involving great loss of time and great fatigue. If, on the contrary, they availed themselves of their numbers in the obvious mode of exploring in different directions at once, they would infallibly be separated, and then their numbers would be of no avail, for when a party have found the swarm how are the rest to know it? They would cease to be swarm-destroyers at all. The probability is that this mode of feeding requires the simultaneous action of great numbers to explore large spaces at once. It is far from impossible that without some such power the birds would perish. As you may have gathered from the observations given above, this combination of action is secured by the very remarkable habit of a varying proportion of the flock rising and forming a gyrating column. Whilst thus revolving a bird darts out, followed by others who form a screaming party, and then rejoin the column. I have in other letters mentioned that these screaming parties are so constant that I often, through them, know of the passage of the column over head while in the forest, or it gives notice of their approach when, from their great height and distance, they would otherwise elude my observation. It cannot be doubted that these perpetual screams, and the column itself, so conspicuous as it floats, equally or in a far greater degree, announce to the host of birds below the direction of its movements, and thus combine the movements of the whole flock. And we may observe that by the introduction here of the ordinary instinct of swifts to scream when they pursue each other, the hunting birds can concentrate their powers of vision on their search, and by ear know the direction those searches must take. If, therefore, every bird in the flock regulates its course by the slow movements of the column, which thus gives them ample time to explore thoroughly, it will be obvious that, whatever the movements of each individual bird, quite unconsciously the column will always tend to be over the centre; and we might expect exactly what I observed on the 3rd of September, that the hunting birds were thickest immediately round it.

"But though now it can be comprehended how these large flocks of birds keep together in their search, another most formidable difficulty presents itself. Supposing a couple of birds (as I observed on the 20th of August), sweeping up to a troop of Progne, find they are feeding on wasps—a prey which will suit them: the successful birds do not hesitate a moment; their wild, irregular dashes are suddenly changed to a dart in a straight line, a rapid whirl and a dart back again; in fact, they begin at once to feed. How then is the column to know it, or be prevented from moving off in another direction? This, I believe, is effected by a most remarkable structural change, involving a corresponding habit. To describe this change of structure I use the words of your exact old Doctor, 'Eyes large, deep sunk in the head, with remarkably large eyebrows,' only remarking that the surface of the feathers is considered by him as synonymous with 'head.'. If the skin and feathers are removed the eyes are remarkably prominent. He afterwards adds, 'the head large, like whip-poor-will.' I will add to this that the pupil is very large, lustrous and of a very deep blue. So little is, I believe, known as to the effect upon vision which the almost endless changes of form we meet with have in this organ, that we could not say that such and such a form is unnecessary in a particular case; but, reasoning from analogy, we have examples of other birds which pursue insect prey precisely, so far as we can see, in the same manner as these birds: the humming-birds are perhaps even more rapid in their movements, yet none of these are remarkable for large lustrous eyes; quite the contrary, they are rather apt to be smaller than larger than those common to the greatest number of birds. But if we learned that a particular species had such wants that it was necessary it should be able to take a careful survey of objects below it whilst it floated above, we should be able to say, with perfect certainty, it must have a prominent, lustrous eye with a large pupil (deep blue often), carefully screened from the light above by a prominent eyebrow, that it may be wholly unembarrassed in its watch over objects below. Now let us consider the effect of the central position of the column, its commanding height, if suddenly, in any one or two birds at any part of the vast circle it is over, the motions change, like the two birds who had reached the little flock of Progne, detailed above. Can we suppose that an alteration of action, observable to us at a considerable distance, for a moment escapes the keen scrutiny of a hundred telescopic eyes watchfully gyrating above? We may be quite sure it does not, for the sudden descent of the column may often be witnessed. Now it will be understood what will be the effect of this on the scattered birds who are less successful: the column, which has been the centre of their movements, is gone; the birds then rush up in the direction it has disappeared, or, rising above intervening objects, catch sight of it busy feeding. And thus we have the extraordinary spectacle of dozens of birds dashing to the very spot where the prey has been found, as if each had received accurate and separate intelligence. Then a boundary is traced out by a flickering succession of rapid wheels—all within is a storm of dashing courses in every direction at once. The moment the disturbed or angry insects rise from the plants or grass their fate is certain. Others dart out and probably take the wasps as they return to the spot. If we multiply 200 birds by 30 wasps' heads I found to be the allowance of one in an hour and a half, we have 6000 of these formidable insects destroyed in that short time, but I think the number was probably far more. And then, the work accomplished, this wonderful army resumes its aërial march, the magnificent living standard re-erects itself, and its screams growing faint and still fainter, recall the scattered rear.

"I would guard against an impression which may possibly arise from the foregoing details; namely, that in their curious habits there is anything like the rigid instincts observable in other classes of animals. I believe the whole to be carried on by the very simplest instincts, more or less observable in most Hirundinidæ. The same instinct which makes the searching birds join Progne, and often Progne join them, induces them to keep near the column, the column to descend when it sees the prey is found, and the rest to rush after the missing column. It is but a very extraordinary modification of a well-known habit: it results in giving the column a central position, precisely the one where it can best overlook the whole; its motion is probably directed by the direction it observes in the search of a number of birds markedly pushing in one direction, and we can understand why it tends to move slowly in one direction, unless something occur to stop it, because the whole flock has got that direction also. Slow gyration is precisely the movement with which the watching birds can progress slowest with least fatigue to themselves, and thus give time to the searching host below; it is also precisely the movement best calculated for the exercise of their telescopic vision and ensure their immediate detection of the discovery of prey, important to the whole flock. And thus we have an instance of a great swift approaching raptorial birds in habit and structure the moment its wants are similar. The mistakes of Cathartes I have before alluded to are accounted for—than whom no bird is less given to frolic—in oddly joining strangers so far removed from him in wants and habits, but whose manners in this one particular so strangely agree with his own. I would add there is no certain proportion between the column and hunting birds. Individual birds are continually passing from one to the other; they resort to the column possibly for rest. A bird in the column sees a locality or object that it thinks betokens prey; it darts out, is followed by a screaming party, only one or two of which return; the rest deploy and become hunting birds.

"I trust I have thus made clear the mode in which I believe these curious birds are enabled to take a survey of an immense district, and wherever they detect insects in such numbers that the little colony of Hirundines stationed on the spot would be unable to cope with them, suddenly throw into the scale their numbers, great size, activity and unusual voracity.

"You will, I fear, be alarmed at letters of such length as this, and all about a single species, but I found the subject so interesting I knew not where to break off. I trust it will prove interesting enough to you to repay the perusal.

"Yours very faithfully,

"W. Osburn.

"To P. H. Gosse, Esq., F.R.S."

Autumn Notes on Birds.—A small flock of the tufted duck appeared in our river as early as the 27th of July, and towards the middle of August I obtained a specimen of a young mallard. A far greater number of terns have haunted our sand-flats this autumn than for several recent seasons. The arctic, common and black terns have been plentiful; of the latter beautiful little species I have on several occasions seen large flocks fishing assiduously at low water. While the terns were about the river one of my brothers one day shot and brought home to me a specimen of the gullbilled tern

(*Sterna anglica*) in immature plumage. This specimen had the beak two-thirds of the length of the head, and of a greenish black, short and rather conical in form; the legs were greenish black. The bird was the same size as a young bird of the common tern, and its markings were not dissimilar to those of that species. A short time afterwards I saw another specimen of this tern which had been killed on our sands. This specimen was an older bird, and had the beak longer than that of the first specimen, and the angle on the lower mandible very prominent. Its back was a uniform French blue, the nape of the neck black, crown of the head black, streaked thickly with white. Beak and legs greenish black. A specimen of the little auk was picked up in the middle of August on the sands. This was a young bird of the year, with the slate-coloured cheeks characteristic of the immature state. Amongst large flocks of dunlin and ringed plovers I have noticed the curlew sandpiper and sanderling, and of the former one afternoon I noticed a very considerable number. On one or two occasions I noticed the sanderling very numerous. This pretty little Tringa is by no means a regular autumn visitant with us; one September afternoon I had the rare fortune to see a flock of the little ringed plover (*Charadrius minor*), and have since mounted a beautiful specimen, which was killed out of the flock. I was pleased to find this rare and peaceful little plover so distinct from the larger and common C. hiaticula. Yarrell is, as usual most happy in giving an accurate account of the distinctive peculiarities of each species. There have been one or two flocks of the little stint with us this autumn, and I have had some pretty specimens brought to me. When a single bird of this species is seen on the sands he appears a ridiculous little pigmy, but his proportions become grander when he rises on the wing, and the long tertiary feathers of the Tringæ become noticeable. The flight of these little fellows is very rapid, and in a zigzag, not unlike that of a dunlin or jack snipe. They have a shrill cry, quite distinct from that of the other Tringæ which haunt the flats. Godwits and knots have been scarce this autumn; of the former we have not had so many as haunted our sands in May on their way north, and in all the glories of their nuptial plumage. I was on the Braunton sands the morning after a heavy gale towards the end of September, and found them strewn with dead and dying razorbills and guillemots. For more than five miles the sands were dotted in all directions with the white bodies of these birds, and the tide, which was then running in, washed up the bodies of fresh victims each instant; and not only on the sands, but far out in mid channel lay the bodies of these birds, innumerable, floating backwards and forwards on the waves, and puzzling the sailors of the passing ships to account for their destruction. The destruction of life must have been immense. If all the victims to sportsmen, and all those which have been devoured by the "cliff hawks" (*Falco peregrinus*), who have their eyries in one or two places among the breeding stations of the guillemots; if all these which have thus perished during the last century were added together they would not represent one tithe of the birds which perished in that fatal gale: and all these birds were drowned. It seems strange that birds whose very home is on the bosom of the ocean should die thus, but nevertheless it is the fact. As soon as ever the birds are drawn within the influence of the heavy surf they are rolled over and over, and are at length tossed up dead or dying on the beach. The storm falling on them while they are sickly from being in the midst of the great yearly moult is the more fatal. But stranger than this is the number of dead kittiwakes one sees on the sands after a heavy gale of wind at midsummer. These birds are entirely surface feeders, and it seems a fair conjecture that after the waters had been violently disturbed by a gale there would be more food for them on the surface than in calm, weather, but yet all the dead birds you examine have unmistakeable marks about them of having died from starvation.—*Murray A. Mathews; Raleigh, near Barnstaple, October* 5, 1859.

Showers of Feathers.—It is with great reluctance that I venture to reproduce this subject in the pages of the 'Zoologist,' but Capt. Blakiston's hasty and somewhat disdainful reply to my inquiry is not quite satisfactory. That gentleman has entirely mistaken my meaning. I did not for a moment deny the possibility of "feathers scudding in a breeze;" and I agree with him in believing that it is generally known that feathers are capable of being wafted by the wind. Nor did I propose that goose down should be sent to England for the purpose of making "experiments," but merely to afford an interesting and tangible proof to an inquisitive and incredulous mind. If we "let loose at a window" all the "chaff" in Capt. Blakiston's letter instead of "extracting a handful from our bed," nothing but the following sentence remains:—"And as to mistaking feathers for snow, I answer by asking was the latter ever seen floating on water?" but nothing of this sort seems to be mentioned in the first notice of the subject (Zool. 6324). I there find that the writer "witnessed a shower of feathers," and that "it appeared to be snowing." This statement immediately brought to my mind some passages of Herodotus (Zool. 6442), in which he says that showers of feathers were always mistaken by the northern Scythians for falls of snow. Having compared these observations of the ancient traveller and the modern, and found them exactly contrary, surely I am justified in expecting a fuller explanation than that I have received, and I shall be greatly indebted to Capt. Blakiston if he will comply with my request at the earliest convenient opportunity. Was he in the midst of the shower, or at a distance? Did the flying goose-down extend over a large region of air? Are the Indians in the habit of carrying on the "operation of goose plucking" to such an enormous degree as to cause it to rain feathers? Perhaps they observe a sort of Michaelmas day, in which whole tribes, individually and collectively, indulge in goose-flesh; or, perhaps, they were merely "extracting handfulls from their beds" to make "experiments," and astonish the natives of the neighbourhood. With every apology to Capt. Blakiston for having aroused his indignation by presuming to imagine that he could possibly have mistaken feathers for snow flakes, I sincerely hope he will prove that his account of "showers of feathers" possesses more authenticity than the old story of "showers of frogs."—*T. W. Greene; September* 26, 1859.

[I hope the subject may not be allowed to drop, merely adding that I believe it quite impossible for an observer of Capt. Blakiston's experience to have mistaken snow for feathers: I was surprised that such a suggestion should be made. Such showers of feathers are not so rare as either of my correspondents seem to suppose.—*Edward Newman*].

Hawfinch breeding at Muswell Hill.—Having noticed in this month's number of the 'Zoologist' an account of the appearance of the hawfinch at Selborne, it occurred to me to mention that a pair of these birds built in the spring of this year, as far as I can recollect, in the end of May or beginning of June, in an apple tree in a garden, at Muswell Hill, near London. The gardener there informed me one afternoon that he had just destroyed a nest, which he believed to be that of a butcher bird, and killed the five young ones which it contained, and that the old birds were still perched on an adjacent elm tree, uttering a harsh note. On repairing to the spot I found one of them had disappeared; but with some difficulty, for it was very wary, I succeeded in shooting the other, which, upon examination, proved to be a female hawfinch. I also subsequently discovered, on the ground, one of the young birds still living, which I took into the house, and endeavoured to rear, but it died before morning. The foliage of the apple tree was very thick, and the nest—which was, as I understood, very coarsely constructed—about six feet from the ground. This is the only recent instance of the occurrence of this bird in the neighbourhood, as far as I can ascertain.—*John Henry Gray; 7, New Inn, Strand, October* 14, 1859.

Occurrence of the Sand Grouse in Norfolk.—Early in the month of July last a very beautiful specimen of Pallas's sand grouse (*Syrrhaptes paradoxus*) was shot in the parish of Walpole St. Peter's, in this county, about two miles from the Wash. The bird was alone when shot, but at least one other, apparently of the same species, was observed about the same time in the neighbourhood. There is reason to believe the present specimen to be an adult male, in perfect plumage, the beautifully elongated feathers of the tail and wings happily uninjured. It has been beautifully mounted by Mr. Leadbeater, of Brewer Street, and is now in the Lynn Museum. This is, I believe, the first occurrence of this bird in England, if not in Europe.—*Frederick Currie; Clenchwater, Lynn, Norfolk, September* 29, 1859.

[See the account of another specimen Zool. 6728.—*Edward Newman*].

Familiarity of Shannies (Blennias pholis).—I think the familiarity of some shannies I took a few days ago is worth noticing. Two of them were placed in a pan along with a pair that had been captured more than a fortnight, and were consequently tame. The very next day, on feeding these latter, I was surprised to see the new-comers approach for their share of the food, and found that they would follow the finger, and bite at it after the manner of the domesticated specimens. Could it be that they were influenced by the example of the others?—*G. Guyon; Ventnor, Isle of Wight, August* 10, 1859.

Quivering Movement of the first Dorsal Fin in the Five-bearded Rockling.—Last week I took a specimen of the five-bearded rockling, and while viewing it in the aquarium was struck by the peculiar quivering movement of the delicate appendage termed the first dorsal fin. This mane-like organ was alternately agitated and quiescent, reminding one of the action of the breathing-apparatus along the sides of the larva of Ephemera. Yarrell notices this movement in the three-bearded rockling, and no doubt it is common to both species. The death of the specimen the same evening prevented any further observations. Is any cause known for this peculiar action?—*Id.*

The Moulting of Crustacea.—The moulting of Crustacea is usually described as a painful and tedious process, only accomplished after many struggles. Perhaps different species vary in this respect; at least I saw nothing of the kind in the case of a Carcinus Mænas in my possession last spring. The first part of the process I did not witness, as when I looked into the pan the crab had about a fourth of its body protruding from the hinder portion of the shell. Though I watched it closely, no effort appeared to be made, but the shell seemed to slide off gradually, as if the body was expanding, and the shell was compelled to slip off by its natural spring. No difficulty seemed to occur about the claws, but when nearly free the crab withdrew itself at one step from its old covering, and the operation was completed. Whether any exertions were required to make the first opening in the shell I had no opportunity of observing. It is remarkable how seldom the act of exuviation is witnessed; while the cast shells in the aquarium prove its frequent occurrence: probably it takes place in the night or early morning; and no doubt the creature avails itself of concealment where it is procurable, or its comrades might act on the principle that when a man has his coat half off to fight is the time to pitch into him.—*George Guyon; Ventnor, Isle of Wight, August* 10, 1859.

A Week at Killarney. By Edwin Birchall, Esq.

June 18. Reached the Muckross Hotel, at 5 P. M., accompanied by my friends A. A. Dunlop and N. Cooke: walked to Torc Waterfall, about a mile from the inn, capturing Hepialus velleda, H. hectus, Hypena crassalis and Ennychia octomaculalis. Subsequently sugared in the wood at the foot of Torc Mountain, but with small success, Thyatira Batis, T. derasa and Geometra Papilionaria being the only captures worth naming.

June 19. Walked to the head of the upper lake; it was a glorious summer day,—

> "One of those heavenly days that cannot die,"—

whatever the moths might do, and die they did, some hundreds of them. Rogers sarcastically said, "Englishmen are all alike in this matter; they come down to breakfast, look out of the window, and say, What a lovely morning! what a heavenly day! Come, let us kill something." The wooded slope from Derrycunily Waterfall to the boat-house is first-rate collecting-ground, and commands a magnificent prospect: at our feet the lake studded with wooded islands; on the opposite shore rises the Purple Mountain, barren, but singularly brilliant in colouring; further to the left the huge mass of the Reeks, the mightiest mountain in Ireland, shoots its jagged crest into the air, and closes up the valley; here the fleecy masses of vapour pour out of the Gap of Dunlo, and across its dark and rugged breast, seeming to cling to it and circle the giant around with a belt of light: as the lakes are not many feet above the sea-level, nearly the whole height of the mountain (3,400 feet) is here seen at a glance in one vast sweep. It is not often given to entomologists to collect in fairy-land, nor very easy, when it does so happen, to avoid envying the people who dwell in such a paradise all the year round; however, let us hope they are sufficiently grateful to Providence for their good fortune, and proceed to business. Our captures included—

Hydrelia Bankiana. In abundance. It is out a full week earlier than last year; the caterpillar is said by Stainton to feed on grasses, but the moth seems attached to the Myrica Gale; it flies about sunset, but is easily disturbed at any time, settling again within a few yards.

Erastria fuscula.

„ uncana.

Cabera strigillaria. Quite a different looking insect to the English C. strigillaria.

Macaria notataria.

Melanippe hastaria.

Phytometra ænea.

Corycia temerata.

„ taminata.

Euthemonia russula.

Lasiocampa Quercus.

Thecla Rubi.

Cœnonympha Davus.

Saturnia Carpini. Larvæ abundant.

Hypena crassalis. Flitting about the gloomiest parts of woods in plenty.

Eupithecia debiliaria. On the stems of the old holly trees, from which a smart blow is required to dislodge it: the labour of taking it in this way is, however, very great; perhaps we got one specimen for every hundred trees examined.

On our way back called at the Tower, to see P. Bouchard: he showed us a splendid male specimen of Notodonta bicolora, captured the previous week. Sugared in the evening, but with no result. Noctuæ seem very scarce.

June 20. Over the same ground, and captured most of the species taken yesterday, also Melitæa Artemis, Hyria auroraria and Ligdia adustata. On swampy ground near the lake took a pair of Dolomedes fimbriatus, a monstrous and horrid-looking spider. Mr. Meade, of Bradford, to whom I am indebted for the name, informs me that it is not a common species; fortunately so, I think, for it has a very tropical and truculent aspect.

June 21. To the Gap of Dunlo, and thence round the lakes to Killarney; heavy rain most of the day. Our only captures were Melanippe hastaria, Macaria notataria and Melanthia albicillata. The brilliant flowers of Pinguicula grandiflora studded the sides of this rugged mountain pass, which, although shorter than Llanberris, I think far exceeds it in grandeur.

June 22. My companions ascended Cromaghlan Mountain. On the summit is a small tarn, which appears to have no connexion with the lakes below; from it were obtained many specimens of the Limneus involutus of Harvey; I believe no other locality is known for this curious and fragile shell. Donacia nigra (taken on the bank of the tarn), Olinda Ulmana and Emmelesia tæniaria (beaten from hedge-rows), and a pair of Microdon apiformis (Diptera) were our only entomological doings worth recording.

June 23. Spent on the lakes. Cossonus Tardii in immense profusion on Innisfallen Island, under bark of decayed ash and holly, occasionally clustered in such masses that we held our hats under and scraped them down by handfulls. The guardian of the island, who, on our arrival, very politely pointed out the decayed trees, was soon horrified at our proceedings, seeming to think that three maniacs, bent on destroying the timber under his care, had landed on his lonely isle; he was stupidly impervious to our explanation that Cossonus was the real culprit, and we were compelled to separate and attack three trees at once, so that two of us at least might fill our bottles in peace. Future visitors are advised not to ask to see the vegetable ruins of the island, but to confine their inquiries to the stone antiquities, unless they wish to encounter a frantic Kerry man. A large proportion of the timber on the island is suffering from the attacks of Cossonus; the specimens vary greatly in size, some specimens being eight or ten times the bulk of others. We obtained Gyrinus bicolor, from the lake near Dina's Island, and Trechus ——? under stones at Old Weirbridge. A brilliant sunset, leaving Torc mountain a mass of intense indigo blue. Remained in the birch-woods till day-break, in the hope of making out the habits or hour of flight of Notodonta bicolora. About midnight Arctia Menthrasti flew past, and its white wings for a moment cheated us into the belief that we had secured the prize; possibly we were too late for N. bicolora, which is said to appear on the Continent in May.

June 24. Muckross domain and peninsula (which, by the liberality of Colonel Herbert, are thrown open to visitors) occupied us to-day. Among the Lepidoptera captured were—

Nola strigula
Venusia Cambricaria
Emmelesia tæniata
Eupithecia Satyrata
„ plumbeolata
Eupithecia castigata
„ irriguata
„ coronata
„ debiliata

Among Coleoptera—

Phyllopertha suturalis
Melolontha hippocastani
Auchenia 4-maculata
Galeruca calmariensis
Leptura sexguttata
Œdemera lurida
Silpha subrotundata

Libellula cœrulescens was very common near the lake: saw one pursue and capture a specimen of Hydrelia Bankiana. In the evening divided our week's captures, and went to bed by daylight.

The following insects were also taken during our visit:—

Hadena rectilinea
„ contigua
Agrotis saucia
Triphæna fimbria
Cymatophora fluctuosa
Phoxopteryx biarcuana
„ Myrtillana
Grapholita geminana
Stigmonota perlepidana
Lobesia reliquana
Eupœcilia nana
Clepsis rusticana
Capua ochraceana
Penthina sauciana
„ ochromelana
Lampronia prælatella
Lampronia rubiella
Psychoides Verhuellella
Adela Degeerella
Prays Curtisellus
Plutella annulatella
Gelechia tripariella
„ Mouffetella
Œcophora lambdella
„ pseudo-spretella
Butalis grandipennella
„ fusco-æneella
Argyresthia retinella
Gracilaria hemidactylella
Pterophorus bipunctidactylus
Chilo forficellus

Including eighteen species not previously recorded as occurring in Ireland. Although this looks a pretty fair result for one week's work, still there was not that abundance of life that might have been looked for in a district apparently so well suited to the requirements of living creatures; in the vast woods the silence of death seemed to reign: with the exception of a few species insects were not numerous, and the most promising-looking spot often proved a total blank. Of many of the species above recorded only single specimens were observed. Of birds we saw very few; the wren only was abundant. We saw one bullfinch, also the place where the eagles are not,—it is to be feared this noble bird now only exists, with O'Donoghue and his fairies, among the traditions of Killarney.

The district is characterized botanically by the occurrence of various plants, of which the following may be named:—

Saxifraga umbrosa,
„ elegans,
„ hirsuta,
„ Geum,
„ affinis,
„ hirta,
Erica Mackaiana,
„ mediterranea,
Daboëcia polifolia,
Arbutus unedo,
Pinguicula grandiflora,
Arabis ciliata,

which are not found in any other part of the British islands, or any nearer point of Europe than the coast of Spain, with which country the late Professor Edward Forbes suggested a connexion subsisted in some past geologic age, by means of land over which the Atlantic now rolls: at that time (1846) Professor Forbes stated, "There was no evidence of any local assemblage of animals corresponding to this Flora." The missing link is now, in part at least, supplied, a number of peculiar shells having been found attached to the district and neighbouring shores; and although with regard to the insect tribes we are still imperfectly informed, evidence is not wanting that a local assemblage of insects also exists. Anthrocera Minos, Notodonta bicolora and Hydrelia Bankiana will fairly represent three of the great divisions of the Lepidoptera, and if the first-named be also a native of Scotland, the west of Ireland is certainly its head-quarters. How strange that these fragile creatures should be preserved through such vast changes to be evidence of the destruction which has overwhelmed the mightier works of God—that they should endure while great continents have sunk beneath the waves.

In the 'Entomologist's Annual' for 1859 it was intimated that a splendid butterfly, Charaxes Jasius, might not improbably occur at Killarney, being attached to the Arbutus, one of the peculiar plants of the kingdom of Kerry; we were not fortunate enough to meet with it, although there was a nymphalidous chrysalis found suspended to a rock below an overhanging Arbutus, of which great hopes were entertained. Respect for the feelings of my companions induces me to draw a veil over the rest of the story, suffice it to say it did not produce what was expected of it.

June 25. Out at 5 A. M. and dug up a hamperful of Osmunda regalis as a peace-offering to the ladies at home: a wet morning, heavy thunder-clouds shrouded the mountain and the lake looked dark and stormy. As we drove to the station a brilliant rainbow spanned the valley between Torc and Mangerton, and the whole scene was one of lurid grandeur.

EDWIN BIRCHALL.

Description of the Larva of Eupithecia subnotata. — Ground-colour dull yellowish green, pale green or reddish gray, with a chain of dull olive lozenge-shaped dorsal spots, becoming confluent towards the head and tail, and often bordered by an indistinct olive line. The spots and lines sometimes very faint. Segmental divisions yellowish or reddish. Spiracular line yellowish. The whole body very rough, thickly studded with minute white tubercles and black spots, and sprinkled here and there with short stumpy hairs. Belly pale green, with an interrupted line running the whole length. Feeds on the seeds and flowers of various species of Atriplex and Chenopodium, in August and September. It seems to prefer the banks of tidal rivers. I have taken it in profusion on the banks of the Orwell and the Stour near, Ipswich, but have also met with it in some plenty in waste ground near Bexley. It is not so easy to rear as others of the family, and often pines in confinement. The pupa, which is enclosed in an earthen cocoon, has the wing-cases dark green. Thorax and abdomen yellowish, the latter not so tapering as many of the other Eupitheciæ. The perfect insect appears in June and July.—*H. Harpur Crewe; Breadsall Rectory, near Derby, September* 28, 1859.

Additional Remarks on the Larva of Eupithecia innotata. — During the last fortnight I have taken a few larvæ of E. innotata off ash in this neighbourhood. I find that a variety occurs here which I have not previously noticed. Its characteristics are as follows:—Central dorsal line wanting. Supplied by a series of dusky triangular markings, becoming very faint or altogether evanescent on the anterior and posterior segments. On each side a row of slanting yellowish stripes tinged with pink.—*Id.*

Description of the Larva of Eupithecia centaureata. — Long, rather slender, and tapering towards the head. Has a slightly wrinkled appearance. This larva is almost as variable as that of E. absinthiata; and so dissimilar are some of the varieties that I am not surprised at many a tyro being "awfully puzzled." The following are those most commonly met with: — Var. 1. Bright yellowish or bluish green, with a number of dorsal and subdorsal spots and lines of a darker shade; the dorsal markings very often forming a series of disjointed lozenge-shaped spots. Var. 2. Uniform yellow, yellowish or bluish green, without any spots or markings whatever. Var. 3. Greenish or pinkish white, with a chain of deep red, trident-shaped dorsal spots, connected together by the central prong, and becoming confluent towards the head. Belly whitish, with a short red line or spot in the centre of several of the segments. The larva feeds in August and September, upon the flowers of Senecio Jacobæa and S. erucifolius, Solidago Virgaurea, Achillæa Millefolium, Eupatorium cannabinum, Pimpinella magna and P. Saxifraga, Silaus pratensis, Campanula glomerata and Scabiosa columbaria. Vars. 1 and 2 I have almost invariably found upon the three first-named plants, whilst those on the other flowers were var. 3. This latter variety strongly resembles the pink form of E. nanata. The pupa is enclosed in an earthen cocoon. There are two varieties, the commoner one scarcely, if at all, distinguishable from that of E. absinthiata; the other a uniform pale red. The perfect insect appears more or less from May to August.—*Id.*

PS.—In my description of the larva of E. absinthiata (Zool. 6734), at line 10 there should be a full stop at the word "yellow;" and at line 13 "S. crucifolium" should be "S. erucifolius."—*Id.*

Larva of Notodonta dictæoides. — Mr. Smithson, Mr. Button, and some others of our hard-working entomologists have beaten the larvæ of Notodonta dictæoides off birch trees at Wickham. They feed on the elegant pendant branches of trees that have been allowed to grow up, and are never found on those which have been cut down and have thrown up suckers.—*Edward Newman.*

Capture of Catocala Fraxini at Scarborough. — On the 17th of this month (September) I had the good fortune to take a very fine specimen of Catocala Fraxini at rest on a wall in this town.—*Thos. Wilkinson; 6, Cliff Bridge Terrace, Scarborough, September* 29, 1859.

Proceedings of Societies.

ENTOMOLOGICAL SOCIETY.

September 5, 1859.—Dr. GRAY, President, in the chair.

Donations.

The following donations were announced, and thanks ordered to be presented to the donors:—'Proceedings of the Royal Society,' Vol. x. No. 36; presented by the Society. 'Farm Insects,' Parts 3 and 4; by the Author, John Curtis, Esq., F.L.S. 'The Zoologist' for September; by the Editor. 'Smithsonian Contributions to Knowledge,' Vol. x. 'Annual Report of the Board of Regents of the Smithsonian Institution for the year 1857; 'Reply to the Statement of the Trustees of the Dudley Observatory,' by Benj. Apthorp Gould, jun.; 'Defence of Dr. Gould, by the Scientific Council of the Dudley Observatory;' by the Smithsonian Institution. 'The Athenæum' for July; by the Editor. 'The Journal of the Society of Arts' for August; by the Society. 'The Literary Gazette for August; by the Editor.

Election of a Subscriber.

R. W. Fereday, Esq., of 2, Leighton Villas, Talbot Road, Kentish Town, was balloted for and elected a Subscriber to the Society.

Exhibitions.

The President exhibited, on behalf of their captor, Dr. Power, the following British Coleoptera, with localities and dates of capture:—

Anchomenus versutus, *Gyll.* Wimbledon, July 30, 1858.
Polystichus fasciolatus. Sheerness, June and August, 1859.
Trechus longicornis. Banks of Ribble, July, 1859.
Acrognathus mandibularis, *Gyll.* Darenth, June 19, 1859.
Odacantha melanura. Merton, August, 1859.
Deleaster dichrous. Colney Hatch. June 25, 1859.
Anchomenus pelidnus (var. *Thoreyi ?*). Merton, July, 1859.
Ancylophorus glabricollis, *Eric.* Merton, July 26, 1859.
Helophorus intermedius. Merton, July, 1859.

The two last-mentioned species had not previously been recorded as natives of Britain.

Mr. Smith remarked, with reference to Polystichus fasciolatus, that Mr. Hewitson took this species in some plenty, on the shore to the west of Southwold, near Lowestoft; they were found under stones above the shingle on the sloping shore, in front of the salt marsh beyond which is the mud wall leading to the ferry over to Walbenwick. The salt marsh abounds in species of Coleoptera. The date of capture was the month of April.

Mr. Stevens exhibited a portion of a collection of Coleoptera and Lepidoptera made by Mr. Trimen in South Africa, about 300 miles east of the Cape of Good Hope; and a fine series sent from Sierra Leone by Mr. Foxcroft.

Mr. Stevens also exhibited a living specimen of Locusta migratoria, which he had captured near Brighton, in which neighbourhood, he stated, the species was unusually common this autumn.

Dr. Knaggs observed that he had seen a specimen lately taken at Camden Town.

Mr. M'Lachlan exhibited a specimen of Hadena peregrina, which he had lately captured at Freshwater, Isle of Wight, being the second recorded British example; also Phibalapteryx gemmaria and Eupœcilia flaviciliana, from the same locality.

Dr. Allchin exhibited a specimen of Synia musculosa, taken at Brighton, and two fine examples of Nola centonalis, taken in Kent.

Mr. Janson exhibited a fine new species of Adelops, found by M. Jacquelin Duval in the Pyrenees, and for which he proposed the specific name of Bonvouloirii.

Dr. Knaggs exhibited the following Lepidoptera, with notes of capture:—

Clostera Anachoreta. He had lately been fortunate enough to capture eleven larvæ of this insect in one of the home counties, and succeeded in rearing ten moths; a friend who subsequently took a pupa presented it to him, and this also reached the imago state. The only reputed British examples of this species hitherto known are contained in the British Museum Collection, and were obtained by the late Dr. Leach from the collection of Mr. Spratt: so many years having elapsed without the occurrence of other specimens, its claim to rank as a British insect has been almost universally disputed, and the present capture may therefore be looked upon as a re-discovery.

Aplecta Occulta. A specimen taken in his own field at Camden Town in August last. Few examples of this fine insect have occurred in the southern districts of Britain. He had captured, during the past three years, upwards of ninety species of Noctuæ in this piece of ground.

Emmelesia Tæniata. Taken by B. Piffard, Esq., at Tintern, at the end of June; the locality is interesting, the insect having previously only occurred in Ireland and in the Lake District.

Eupithecia tenuiata. Also taken by B. Piffard, Esq., at the same time and place.

Nonagria concolor. Taken at Folkestone, end of June. Some of the Members present were of opinion that it was not that species, the examples being paler and apparently a more slender insect than those found in the fen district.

Simaethis vibrana. Taken at Folkestone, end of June. Previous captures of this insect certainly do not exceed six examples.

Diplodoma marginipunctella. Bred by Dr. Knaggs from larvæ, taken chiefly near Epping, at the beginning of June. Dr. Knaggs observed that the case-bearing larvæ of this species were by some entomologists considered to be entirely carnivorous; he had, however, found them to feed freely on bramble and hazel.

Melanippe fluctuata. A singular variety, destitute of the larger costal blotch, the central spot being thereby brought out conspicuously.

Dr. Knaggs also exhibited the living larvæ of Acidalia strigillata, he believed never before seen in this country; they were reared by him from the egg, and were a few weeks old: he observed that he had supplied them with various plants as food, but all were rejected by them till (by the advice of Mr. Henry Doubleday) he had given them the common knot-grass (*Polygonum aviculare*), on which they fed freely.

And lastly, Dr. Knaggs exhibited a male of Pamphila Linea and a female of Anthrocera filipendulæ, which he had taken *in copulâ*, and which was confirmed by Mr. J. B. Lynch, who also saw them in that state; he kept the Anthrocera alive for some time, in the hopes of getting ova, but was doomed to disappointment.

Strophosomus limbatus feeding on Rhododendrons.

The Secretary read the following letter, addressed to him by Mr. Charles Noble, of Bagshot Nursery, dated August 19th, 1859:—

"Sir,—I trust you will pardon the liberty I take in sending the enclosed insects to you; they are doing me an immense amount of injury by eating the leaves of young Rhododendrons, and it appears to me they will destroy some thousands if a remedy cannot be found to destroy them. Could you favour me with its name, its mode of life, how and where its eggs were laid, and if any known remedy can be adopted to destroy it?"

Mr. Janson observed that the insects sent were Strophosomus limbatus, a Curculio common on heath, and therefore doubtless abundant in the immediate neighbourhood of Mr. Noble's grounds; and the President remarked that it was scarcely to be wondered at that the insect should attack Rhododendrons, which belong to the same natural order of plants as heaths.

Bees drinking from a Chalybeate Spring.

Mr. Tegetmeier stated that when recently at Blechynden, near Southampton, he was informed that the bees in the neighbourhood resorted almost exclusively to one particular spring, or deep open cutting dug for draining: on examination, he found that the water was strongly impregnated with iron, evidently derived from the decomposition of iron pyrites. He noticed that the bees congregated in the greatest numbers at the head of the cutting, drinking the water as it issued from the ground, before it had deposited any of the iron as peroxide. There were numerous other open cuttings in the field, the water in which was not impregnated with iron, and they were not frequented by the bees. The fact of bees preferring a chalybeate spring had not, he believed, been previously noticed.

Mr. Pascoe stated that the collection of insects of all orders belonging to the United Service Museum was to be disposed of by private contract.

October 3, 1859.—Dr. Gray, President, in the chair.

Donations.

The following donations were announced, and thanks ordered to be presented to the donors:—'The Journal of the Royal Agricultural Society of England,' Vol. xx. Part 1; presented by the Society. 'Tijdschrift voor Entomologie uitgegeven door de Nederlandsche Entomologische Vereeniging,' Vol. iii. Parts 3, 4 and 5; by the Entomological Society of the Netherlands. 'Journal of the Procedings of the Linnean Society,' Vol. iv. No. 14; by the Society. 'Farm Insects,' Part 5; by the author, John Curtis, Esq., F.L.S. 'Exotic Butterflies,' Part 32; by W. W. Saunders, Esq., F.R.S. 'The Zoologist' for October; by the Editor. 'The Journal of the Society of Arts' for September; by the Editor. 'The Literary Gazette' for September; by the Editor. 'The Athenæum' for August; by the Editor. 'A Manual of British Butterflies and Moths,' Vol. ii.; 'The Entomologist's Weekly Intelligencer,' No. 157; 'The Natural History of the Tineina,' Vol. iv.; by H. T. Stainton, Esq. 'Bijdragen tot de Dierkunde uitgegeven door het Koninklijk Genootschap Natura Artis Magistra te Amsterdam.' Part 7; by La Commission du Jardin Zoologique d'Amsterdam. Four specimens of Pterophorus Loewii; by the Rev. O. P. Cambridge.

Election of a Member.

The Baron Maximilian de Chaudoir was balloted for, and elected a Member of the Society.

Exhibitions.

Mr. Stevens exhibited a specimen of Pieris Daplidice, taken by Mr. Shickle on the Kentish coast.

Mr. Bond exhibited specimens of Laphygma exigua and Heliothis armigera, taken at Freshwater; also single examples of Noctua flammatra and Leucania extranea, from the same locality; these two last-mentioned species being additions to the list of British Noctuæ, and the latter especially remarkable as not being hitherto recorded as an European insect, although found in various parts of America, Asia and Australia.

Mr. Bond also exhibited, on behalf of Mr. Matthews, a specimen of Aspilates sacraria, taken by him in Devonshire; and on the part of Mr. Lynch, a fine specimen of Acidalia rubricaria, taken in Kent.

Mr. Smith exhibited a specimen of Aspilates sacraria, taken on Banstead Downs, on the 22nd of August last; and a number of the original drawings of the illustrations of Roesel's ' Insecten Belustigung, lent to him by Dr. Gunther.

Dr. Allchin exhibited a specimen of Lycæna Bœtica, taken near Brighton on the 7th of August last, and the first known instance of the occurrence of the species in Britain; and an example of Leucania extranea taken near Lewes on the 9th of September. He also exhibited specimens of Coremia ferrugata and the variety called unidentata by Haworth, taken *in copulâ*.

Dr. Allchin also exhibited beautiful drawings of Lycæna bœtica and Leucania extranea, made by Mr. W. S. Coleman.

Mr. Stainton observed with reference to the occurrence of L. bœtica in England, that the species is usually rare in the north of Paris, but this season it had been very abundant in the north of France, and also in the Channel Islands; it was not, therefore, to be wondered at that it should have reached our southern coast.

Mr. Stainton exhibited a specimen of Pterophorus brachydactylus, taken in Cumberland by Mr. Hodgkinson; this being the second British specimen of the insect, of which a single specimen had occurred in Norfolk more than twelve years ago.

Mr. Stainton exhibited a drawing of a new species of Lithocolletis (L. Helianthemi) with a cocoon of the insect; the habit of this species was altogether abnormal, as the larva, which mines the under side of the leaves of the Helianthemum vulgare, quits the mine to undergo the change to the pupa state, and forms a flattish, white cocoon, very similar to those formed by some larvæ of the genus Gracilaria. The perfect insect has considerable resemblance to L. sylvella, and, despite the habit of the larva, appears to be a veritable Lithocolletis. Mr. S. has received the drawing and cocoons from Herr Hofmann, of Ratisbon.

Mr. F. Moore exhibited the larvæ of the Eria moth, of Bengal (*S. Ricini*, Boisd.), and of the hybrid between it and the Eria of China (*S. Cynthia*, Drury), reared from eggs received from M. Guerin-Menéville. The larvæ have been fed on the castor-oil plant (*Ricinus Palma-Christi*).

Mr. Gorham exhibited some Coleoptera taken near Westerham, including Amara ruficincta, Tetratoma Desmarestii and Philonthus thermarum; also Stenolophus Skrimshiranus, from Hammersmith.

Mr. Trimen exhibited a further portion of the entomological collection made by him in South Africa, and part of which had been exhibited at the September meeting of the Society; amongst the Lepidoptera were some splendid Hepialidæ and Zygænidæ.

Dr. Knaggs exhibited some specimens of a species of Ino, which he considered might be distinct from the known British species, Ino Statices and I. Globulariæ: he also exhibited a singular mass of cocoons found on a twig of the Virginian creeper, at Kentish Town, which Mr. Westwood pronounced to be the cocoons of Microgaster alvearius.

Mr. Janson exhibited a specimen of Emus hirtus, taken at Southend by Mr. Haward; and an example of the true Anchomenus elongatus, *Dejean*, taken by Mr. Brewer at Southwold, Suffolk,—the specimen, which is unique as British, now belongs to the collection of Mr. Jeakes.

Mr. Janson read some extracts from Henry Mann, Esq., of Mercarra in Coorg, Madras Presidency, respecting a species of Coccus, which has done much injury to the coffee plantations in that part of India.

Mr. Mitford stated that he had recently captured a single larva of Deilephila Euphorbiæ in the Isle of Wight.

The Larvæ of the Gnat.

Mr. Westwood read a letter from Mr. Swan, which stated that whilst trying some experiments in bleaching materials for paper, he had occasion to use some rain-water swarming with the larvæ of the gnat. Wanting to make some strong alkaline ley, he put 2 oz. of soda (used for washing) with 2 oz. of quick-lime into a pint of the water, whereupon the larvæ darted about as usual, and did not appear in the least inconvenienced after the soda was dissolved and the lime slacked, nor did they succumb till the water was placed over a fire to be boiled. Knowing that chloride of lime was very destructive in killing fish (from seeing the effects of the spent liquor thrown by the paper-makers into the river, after having used it for bleaching their pulp), he tried the effect of it upon these larvæ in two quarts of water, in which over 1 lb. of bleaching salts (or chloride of lime) was thoroughly dissolved, and which was so strong that after stirring it up with the hand he was obliged to anoint it with some oil to take off the injurious effect produced upon the skin; these larvæ, however, seemed quite at home and comfortable, if anything a little more lively, even after having been in the liquor an hour and a half.

Observations on Sitaris humeralis.

Mr. Smith read some remarks on Sitaris humeralis by Mr. Stone, in which the writer, after stating that his attention had been directed to these insects on some old walls in the neighbourhood of Brighthampton, by a paper by Mr. J. W. Douglas, published in No. 149 of the 'Entomologist's Weekly Intelligencer,' observes:—

"On the 17th of August the insect made its first appearance this season, and in the course of that day I secured seven specimens. On the following day I obtained four more, and on the third and fourth days a couple of dead ones. Not a single specimen was to be met with from this period till the 3rd of September, when the insect again appeared, and this time in great profusion. I procured that day upwards of thirty specimens, and they have been coming out daily, in numbers apparently varying somewhat, according to the temperature, from that time to the present (September 27th).

"When the insect first began to appear in the winged state I set about exploring the cells of the bee upon which it was said to be parasitic. In doing this I obtained three or four larvæ just about to become pupæ. The change from one state to the other reminded me more than anything else of a 'dissolving view.' First, there was a distinct picture in the shape of a white, fat larva; presently an obscurity began to extend itself over the picture, gradually becoming more and more dense, and after a while as gradually clearing away, when an entire change was found to have taken place; and instead of a white, fat larva, there was to be seen an amber-coloured object, in shape much like a coffee-berry, loosely enveloped in a semi-transparent covering. Having removed several of these coverings, and examined them with the aid of a powerful lens, they appear to me to be the skins of bee larvæ, and if so, it is clear the Sitaris larva must feed upon the body of the bee larva, living and undergoing its changes inside the latter.

"I obtained a considerable number of pupæ, which were found in groups, each group consisting of from three or four to ten or twelve, and each pupa occupying a cell of the bee upon which the insect is parasitic.

"The perfect insects make their way out of the cells in which they have been bred by gnawing away the mortar or dirt of whch they are composed. The females, on emerging, station themselves just outside the cells they have quitted, and there await the coming of the males. They are not in general long without a partner, for by some curious arrangement they mostly contrive to emerge in pairs. Copulation takes place without loss of time, and in a brief space (generally not longer than three or four minutes) impregnation is effected, and the female, without removing from the situation she has been occupying, proceeds to deposit her eggs. They are deposited in immense masses, sometimes in the roof of the cell she has just vacated, or if not there, then in some convenient cranny or crevice immediately adjoining.

"I have observed many instances of females dying, apparently of exhaustion, before they had completed the task of depositing their eggs; and in any case they appear to survive its accomplishment but a very brief period. The males also appear to be almost as short-lived as the females.

"Nature would seem to have given these creatures wings merely by way of ornament, for I have never seen either sex make the least attempt to use them, aërial exercise being a thing they seem never to dream of taking; indeed, they appear to be of the most sluggish habits, rarely, if ever, quitting the wall in which their whole life has peen passed, but to it they cling with amazing tenacity, and it requires some degree of force to compel them to loose their hold."

Mr. Smith observed that having examined the "semi-transparent coverings" alluded to by Mr. Stone, which that gentleman had forwarded to him, he was of opinion that they were not the skins of bee larvæ, as supposed by Mr. Stone, but the cast skins of the larvæ of Sitaris.

Mr. Lubbock said that M. Fabre had recently published, in the 'Annales des Sciences Naturelles,' an interesting account of the habits and metamorphoses of Sitaris. After much trouble he convinced himself that the active little hexapod larva, after fixing itself to the body of the bee, patiently awaits the deposition of an egg, at which moment it quits the bee and attaches itself to the fresh-laid egg. After devouring the yolk it swims about for awhile in the empty egg-shell, and then, after undergoing the first metamorphosis, commences to eat up the honey. M. Fabre is so excellent an observer, and his paper is evidently written with so much care, that this statement is probably correct, in which case Mr. Stone must be wrong in supposing that the Sitaris larva feeds on the body of the bee larva. Mr. Stone will be doing good service to Entomology if he is able, in a future season, to confirm the interesting observations made by M. Fabre.

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Entomological Society's Report concluded.

Mr. Westwood stated that he had himself made nearly the same observations as Mr. Stone, on the habits of the perfect Sitaris, many years ago, in a village, in Oxfordshire, when he had found it usually abundant, and had succeeded in rearing the larvæ from the eggs laid by the females. He had since been favoured, by Madame Audouin, with permission to make copies of the extensive series of observations made on the habits and transformations of the same species, by the late lamented Prof. Audouin, which he promised to lay before the Society, at a future opportunity.

Part 3 of the current volume of the Society's 'Transactions' was on the table.—*E. S.*

TO ORNITHOLOGISTS. — I have just published a New Edition of the 'Zoologist List of British Birds.' It comprises all the additions and corrections necessary up to the 1st of November, 1859. Price 4*d.*, printed on one side only, for cutting out as Labels either for Birds or Birds' Eggs; or 2*d.* if printed on both sides. If ordered by post one penny must be sent for postage.

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To Entomologists, &c.

MR. J. C. STEVENS has been favoured with instructions from the Executors to SELL by AUCTION, at his Great Room, 38, King Street, Covent Garden, on WEDNESDAY, November 23rd, and following day, at half-past 12 precisely, the PRIVATE COLLECTION of INSECTS formed by the late Dr. HORSFIELD, F.R.S., &c., Librarian to the East India Company; which is contained in five well-made Mahogany Cabinets, and is rich in Insects from the East Indies, and the greater part in fine preservation.

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